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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional)	
3712174-424	

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Application Number	Filed
10/646,226	August 22, 2003
First Named Inventor	
Okae et al.	
Art Unit	**Examiner**
1729	Alix E. Echelmeyer

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

- ☐ applicant/inventor.
- ☐ assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)
- ☑ attorney or agent of record. Registration number 46,541
- ☐ attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____

Signature

Thomas C. Basso
Typed or printed name

312.807.4310
Telephone number

February 11, 2011
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☑ *Total of 1 forms are submitted.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):	Okae et al.
Appl. No.:	10/646,226
Conf. No.:	1391
Filed:	August 22, 2003
Title:	POSITIVE ACTIVE MATERIAL AND NON-AQUEOUS ELECTROLYTE SECONDARY BATTERY
Art Unit:	1729
Examiner:	Alix E. Echelmeyer
Docket No.:	3712174-00424

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PRE-APPEAL BRIEF

Sir:

This Pre-Appeal Brief is submitted in reply to the Final Office Action dated November 12, 2010. This Pre-Appeal Brief is filed contemporaneously with a "Pre-Appeal Brief Request for Review" and a "Notice of Appeal."

REMARKS

This Pre-Appeal Brief, Notice of Appeal, and Pre-Appeal Brief Request for Review are submitted in response to the rejections of Claims 6-7, 9-10, 12-14, 16-17, 19-20 and 22-23 in the Final Office Action dated November 12, 2010. Applicants assert that the Examiner's rejections rise to the level of clear error and make the case proper for pre-appeal review.

Claims 6-7, 9-10, 12-14, 16-17, 19-20 and 22-23 are pending. Claims 1-5, 8, 11, 15, 18 and 21 were canceled without prejudice or disclaimer. In the Final Office Action, Claims 6-7, 9-10, 12-14, 16-17, 19-20 and 22-23 were rejected under 35 U.S.C. §103. For at least the reasons set forth below, Applicants respectfully submit that the rejections should be withdrawn.

In the Final Office Action, Claims 6-7, 9, 12-13, 16-17, 19-20 and 22-23 were rejected under 35 U.S.C. §103(a) as being unpatentable over Japanese Patent Publication No. 2002-075368 to Yamaura ("*Yamaura*") in view of U.S. Patent No. 6,258,483 B1 to Abe ("*Abe*") and International Patent Publication No. WO 00/02280 to Kurose et al. ("*Kurose*") as evidenced by U.S. Patent Publication No. 2002/0192137 to Chaloner-Gill et al. ("*Chaloner-Gill*"). For at least the reasons set forth below, Applicants respectfully submit that, even if combinable, the cited references fail to disclose every element of the present claims. Furthermore, one of ordinary skill in the art would have no reason to combine the references to arrive at the present claims.

Independent Claims 6, 12, 16, 19 and 22-23 recite, in part, a positive active material wherein: the surface of the particles of lithium nickelate are uniformly covered with the olivine compound such that the olivine compound forms a layer having a thickness of about 0.1 μm to about 10 μm around the lithium nickelate particles, and a content of the olivine compound in the positive active material ranges from about 5 wt% to about 50 wt%. By uniformly covering the surface of the lithium nickelate particles with the claimed amount of olivine compound and forming a layer having the claimed thickness surrounding the lithium nickelate particles, rather than merely adhering the olivine compound at random to the lithium nickelate particle surfaces, an improved charge/discharge capacity and high-temperature stability can be obtained. See, Specification, page 2, paragraph 19; page 3, paragraph 42; page 4, paragraphs 45-46 and 53-54. In contrast, the cited references are deficient with respect to the present claims.

For example, even if combinable, *Yamaura*, *Abe* and *Kurose* fail to disclose or suggest a positive active material wherein the surface of the particles of lithium nickelate are uniformly covered with the olivine compound such that the olivine compound forms a layer having a thickness of about 0.1 μm to about 10 μm around the lithium nickelate particles as recited, in part, by independent Claims 6, 12, 16, 19 and 22-23. The Examiner asserts that because *Yamaura* teaches coating $LiNi_{1-x}M_xO_2$ particles with $LiFePO_4$ particles using the same method as the present Specification, the resulting product would be the same. See, Final Office Action, page 3, lines 1-5. However, *Yamaura* merely discloses mixing its particles for 5 minutes at a rotational speed such that the processing temperature is between 35° C and 45° C. See, *Yamaura*, paragraphs 42-43. In contrast, the present Specification discloses mixing its particles: (1) in a disk mill at a rotational speed of 10,000 rpm for 10 minutes; (2) using a mixer/crusher at a high rotational speed; or (3) in a high speed agitator at 80 m/s for 30 minutes. See, Specification, page 7, paragraph 93; page 9, paragraph 118.

It is well-known in the art that even a slight change in mixing conditions, such as rotational speed and time of mixing, can alter the resulting product. For example, the Specification teaches that mixing the same components using a mortar for 30 minutes results in a different product (i.e., one which has a much higher reduction in discharge capacity after repeated charge-discharge cycles) than one in which the components are mixed in a disk mill at 10,000 rpm for 10 minutes or in a high speed agitator at 80 m/s for 30 minutes. See, Specification, page 7, paragraph 93; page 8, paragraphs 106 and 110-113.

Yamaura also teaches that changing the mixing conditions alters the resulting product. For example, *Yamaura* discloses that adjusting the mixing conditions such that the processing temperature is over 45° C can result in collision cracks, and if the processing temperature is less than 35° C, the $LiFePO_4$ particles will sufficiently adhere to the front face of the $LiNi_{1x}M_xO_2$ particles. See, *Yamaura*, paragraph 42. Nowhere does *Yamaura* teach or suggest that its processing conditions include the same rotational speed for the same amount of time or otherwise result in forming a layer of $LiFePO_4$ which uniformly covers its particles. Therefore, the method of *Yamaura* does not necessarily result in the same product.

In response to Applicants' arguments, the Examiner asserts that "[w]hile Yamaura provides different specifications on how the method is carried out, Applicant has not shown that the actual method is different, or that the method of Yamaura would not produce the [claimed] product." See, Final Office Action, page 6, lines 10-13. Applicants respectfully submit that the Examiner has improperly allocated the burden of establishing inherent disclosure. Applicants are not required to rebut every allegation of inherency by testing the prior art product at issue. Instead, "the ***examiner*** must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." See, M.P.E.P. §2112 (2010) (emphasis added). Only ***after*** the Examiner has presented evidence or reasoning tending to show inherency does the burden shift to Applicants to show an unobvious difference. See, M.P.E.P. §2112 (2010).

The Examiner fails to cite any basis in fact or technical reasoning to support the determination that the process of *Yamaura* necessarily results in the claimed product. Instead, the Examiner merely alleges that "Yamaura teaches coating [its particles] by mixing in a hybridization system [and] adjusting the rotational speed to produce the desired product" and that, "[s]ince this same method is disclosed in the instant specification[,] . . . the resulting product would be the same." See, Final Office Action, page 3, lines 1-5. However, contrary to the Examiner's assertion, *Yamaura* does not teach adjusting the rotational speed to any level to produce a desired product but rather discloses mixing its components at a specific speed such that the temperature is within a specific range. See, *Yamaura*, paragraph 42. Moreover, as discussed previously, merely mixing in a hybridization system at an undisclosed speed for an undisclosed amount of time is not the "same method" and does not necessarily result in the claimed product, because one skilled in the art would understand that altering the mixing speed and processing time can alter the final product.

Even if the Examiner has presented evidence tending to show inherency, Applicants respectfully submit that they have sufficiently demonstrated that the positive active material of *Yamaura* does not necessarily or inherently possess the characteristics of the claimed product. For example, *Yamaura* teaches that its process results in $LiFePO_4$ particles merely adhered to the front face of $LiNi_{1-x}M_xO_2$ particles. See, *Yamaura*, paragraphs 8 and 40. In contrast, the present Specification expressly distinguishes the claimed compound from one in which the olivine compound is adhered at random on the surfaces of lithium nickelate particles:

> An important aspect of the present invention lies in that the olivine compound is provided not so as to simply adhere on surfaces of particles of lithium nickelate but so as to cover the surfaces of particles of lithium nickelate. If the olivine compound is provided so as to ***adhere at random*** on the surfaces of particles of lithium nickelate by simply mixing the olivine compound with the particles of lithium nickelate, ***the above-described effect cannot be obtained.*** That is to say, the above-described effect can be obtained ***only*** by ***uniformly covering*** the surfaces of particles of lithium nickelate with the olivine compound.

See, Specification, page 3, paragraph 42 (emphasis added).

The Examiner relies on *Abe* merely for the disclosure of varying the weight ratio of $LiFePO_4$ to lithium nickelate and *Kurose* merely as support for the claimed lithium nickelate compound. See, Final Office Action, page 3, lines 13-21; page 4, lines 4-22; page 5, lines 1-8. Nowhere do *Abe* or *Kurose* teach a positive active material including a layer of $LiFePO_4$ which uniformly covers lithium nickelate particles. Thus, even if combinable, the cited references fail to disclose a positive active material wherein the surface of the particles of lithium nickelate are uniformly covered with the olivine compound such that the olivine compound forms a layer having a thickness of about 0.1 μm to about 10 μm around the lithium nickelate particles.

Moreover, even if combinable, *Yamaura*, *Abe* and *Kurose* fail to disclose or suggest a positive active material wherein a content of the olivine compound in the positive active material ranges from about 5 wt% to about 50 wt% as required, in part, by independent Claims 6, 12, 16, 19 and 22-23. The Examiner admits that *Yamaura* fails to teach the claimed weight percent of $LiFePO_4$ to lithium nickelate and instead relies on *Abe* for the teaching to vary the amount of coating on its active material particles to generate desired properties. See, Final Office Action, page 3, lines 19-22; page 4, lines 1-5. However, *Abe* is entirely directed to coating nickel hydroxide powders with cobalt hydroxide powders and merely teaches that the amount of ***cobalt hydroxide*** can be adjusted to obtain a desired capacity. See, *Abe*, column 13, lines 38-56. Nowhere does *Abe* suggest varying the amount of olivine compound coated on another positive active material.

One of ordinary skill in the art would also have no reason to optimize the amount of olivine compound on the particles of *Yamaura* because *Abe* and *Yamaura* fail to teach that the amount of olivine compound coating is a result-effective variable. See, M.P.E.P. § 2144.05(B) (2010). *Abe* does not suggest that an amount of olivine compound coated on a positive active material, or that the amount of coating ***generally*** used on a positive active material, has any effect on the stability or cycle characteristics of a battery. Instead, *Abe* merely teaches that the amount of cobalt hydroxide coated on nickel hydroxide particles can be adjusted to obtain a desired capacity. See, *Abe*, column 13, lines 38-56. *Yamaura* is concerned only with the mixing temperature of its components and fails to teach that the weight percent of $LiFePO_4$ has any effect on the performance of the battery. See, *Yamaura*, paragraphs 42-43. As such, one of ordinary skill in the art would have no reason to vary the amount of olivine compound coated on the particles of *Yamaura* to arrive at the presently claimed range.

Accordingly, Applicants respectfully request that the rejection of Claims 6-7, 9, 12-13, 16-17, 19-20 and 22-23 under 35 U.S.C. §103(a) to *Yamaura*, *Abe* and *Kurose* be withdrawn.

In the Final Office Action, Claims 10 and 14 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Yamaura* in view of *Kurose*, and further in view of U.S. Patent No. 6,391,493 to Goodenough et al. ("*Goodenough*"). Nowhere does *Goodenough* teach or suggest using the claimed amount of olivine compound or uniformly covering lithium nickelate particles with a coating of olivine compound. Thus, Applicants respectfully submit that, even if combinable, *Goodenough* fails to remedy the deficiencies of *Yamaura* and *Kurose*.

Accordingly, Applicants respectfully request that the rejection of Claims 10 and 14 under 35 U.S.C. §103(a) to *Yamaura*, *Kurose*, and *Goodenough* be withdrawn.

For the foregoing reasons, Applicants respectfully submit that the present application is in condition for allowance and earnestly solicit reconsideration of same.

Respectfully submitted,

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Date: February 11, 2011